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ABSTRACT

School districts sometimes need to add relatively small increments of high quality educational space to their existing physical facilities. For some of these situations, the portable or relocatable classroom is the answer; in other cases, the district needs different or more permanent space--quickly. This document comprises six charts that present detailed information about 35 producers, or in some cases, building systems (representing multiple producers). The list, produced in response to requests for "leads" in this area of fast, incremental space, is designed to show the range of possibilities rather than to be comprehensive. Each industry or building system appears on the charts categorized according to (1) general industry characteristics, (2) product description -- structural, (3) sub-system characteristics, (4) production-delivery-erection characteristics, (5) educational facilities and costs data, and (6) interest and conditions characteristics. (Author)

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producers of fast incremental space

Center for Architectural Research, Rensselaer Polytechnic Institute, Troy, New York

January, 1972

SOME PRODUCERS WHO MAY PROVIDE FAST, INCREMENTAL SPACE FOR SCHOOLS

More and more, school districts find themselves in the positions of wanting to add relatively small increments of high-quality educational space to their existing collections of physical facilities, and they want to do it in a hurry. For some of these situations, the portable or relocatable classroom is the answer; in other cases, though, the district needs different or more permanent space -- it just needs it quickly.

Recognizing this need, Educational Facilities Laboratories, Inc., in Spring 1971, asked the Center for Architectural Research at Rensselaer Polytechnic Institute to survey some of the producers who could provide this space -- or who could do it given the proper conditions.

The attached charts present some rather detailed information about 35 producers, or in some cases, building systems (representing multiple producers). It has been extracted from interviews, a questionnaire, and brochure materials supplied by the producers. There are, of course, many industries and systems; this list is designed to show the range of possibilities rather than to be comprehensive. It is produced in response to requests for 'leads' in this area of fast, incremental space.

Six charts are presented here, and each industry or building system appears on each chart:

- A General Industry Characteristics
- B Product Description - Structural
- C Sub-system Characteristics
- D Production-Delivery-Erection Characteristics
- E Educational Facilities and Costs Data
- F Interest and Conditions Characteristics

It is the nature of industries and systems to change. The information presented here is already out-of-date. It has not been rigorously checked and approved by the producers themselves and may be incomplete as well. It is hoped, however, that this listing will provide some active 'leads' for districts seeking this kind of space.

For more information, contact the producers directly or contact Walter M. Kroner, Center for Architectural Research, Rensselaer Polytechnic Institute, Troy, New York 12181 (or call 518-270-6461).

ARMCO Steel Corp.
Metal Products Division
Dept. M 310
P. O. Box 800
Middletown, Ohio 45042
(513) 425-2943

Birdair Structures, Inc.
Air Shelters Division
1800 Broadway
Buffalo, New York 14212
(716) 896-5100

Butler Mfg. Co.
Dept. C 7309 E. 13th Street
Kansas City, Missouri 64126
(816) 231-7400

Carlson Corp.
321 Commonwealth Road
Cochituate, Massachusetts 01778
(617) 969-1200

Component Bldg. Systems, Ltd.
35 East Wacker Drive
Chicago, Illinois 60601
(312) 641-3680

Componoform, Inc.
15 Brattle Street
Cambridge, Massachusetts 02140
(617) 868-9500

Descon-Concordia Systems Ltd.
P. O. Box 239
Place Bonaventure
Montreal 114, Quebec
(514) 346-3477

Duane Rentals, Inc.
950 State Street
Schenectady, New York 12307
(518) 346-3477

General Electric Co.
Advanced Products Division
3198 Chestnut Street
Philadelphia, Pennsylvania 19101
(215) 823-3371

Housing Systems Inc.
2132 Five Mile Line Road
Penfield, New York 14526
(716) 381-9700

Insta Buildings, Inc.
877 South Adams Road
Birmingham, Michigan 48011
(313) 642-8262

Jal-Donn Modular Bldgs., Inc.
P. O. Box 45100
Westlake, Ohio 44145
(216) 871-2090

Kaiser Designed Facilities Corp.
970 Pittsburgh Drive
Industrial Park
Deleware, Ohio 43015
(614) 369-4481

Levitt Building Syst
P. O. Box 155
10250 "F" Drive N
Battle Creek, Mich
(616) 968-9111

Lockheed Aircraft
Div. of Lockheed A
Housing Systems Di
P. O. Box 33
Ontatio Internation
Ontario, Californi
(714) 984-1234

Macomber, Inc.
Box 8830
Canton, Ohio 447
(216) 875-1481

Marshall Erdman &
5117 University Ave
Madison, Wisconsin
(608) 238-0211

Minnesepa Ltd.
P. O. Box 36
Penn Yan, New Yo
(315) 536-3316

Modufab Inc.
915 Middle River D
Professional Bldg.
Fort Lauderdale, Fl
(305) 563-1103

Duane Rentals, Inc.
950 State Street
Schenectady, New York 12307
(518) 346-3477

General Electric Co.
Advanced Products Division
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(313) 642-8262

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Westlake, Ohio 44145
(216) 871-2090

Kaiser Designed Facilities Corp.
970 Pittsburgh Drive
Industrial Park
Deleware, Ohio 43015
(614) 369-4481

Levitt Building Systems, Inc.
P. O. Box 155
10250 "F" Drive North
Battle Creek, Michigan 49016
(616) 968-9111

Lockheed Aircraft Service, Inc.
Div. of Lockheed Aircraft Corp.
Housing Systems Division
P. O. Box 33
Ontatio International Airport
Ontario, California 91764
(714) 984-1234

Macomber, Inc.
Box 8830
Canton, Ohio 44711
(216) 875-1481

Marshall Erdman & Associates, Inc.
5117 University Avenue
Madison, Wisconsin 53705
(608) 238-0211

Minnesepa Ltd.
P. O. Box 36
Penn Yan, New York 14527
(315) 536-3316

Modufab Inc.
915 Middle River Drive
Professional Bldg.
Fort Lauderdale, Florida 33304
(305) 563-1103

Modular Structures, Inc.
Skyway Industrial Park
Pipestone, Minnesota 56164
(507) 825-5146

Module Communities, Inc.
1561 Central Avenue
Yonkers, New York 10710
(914) 961-5800

Monolithic Masonry Bldgs., Inc.
P. O. Box 131
Route 11A
Nedrow, New York 13120

Panelfab International Corp.
1600 N. W. LeJeune Road
Miami, Florida 33126
(305) 633-3266

Parkersburg Bldg. Systems
Division of Textron, Walker/Parkersburg
P. O. Box 1828
Parkersburg, West Virginia 26101

Portable Schools, Inc.
Webster, New York
14580
(716) 872-3224

RAS
Irnes, Inc.
700 Quest Boulevard Cremazie West
Montreal 303, Quebec, Canada
(514) 270-3161

Sectional Structures Inc.
23 Mercer Street
Oswego, New York 13126
(315) 343-5400

SEF c/o The Metropolitan Toronto
School Board
155 College Street
Toronto 7, Canada
(416) 863-9620

Shelley Systems, Inc.
400 Park Avenue
New York, New York 10022
(212) 486-9424

Star Manufacturing Co.
Box 94910
Oklahoma City, Oklahoma 73109
(405) 632-7711

Stirling Homes
1150 East Rive
Avon, New Y
(716) 926-248

Stran Steel Co
Building Syste
National Stee
2999 S. Ways
(713) 644-344

Townland Mar
1001 North Ki
Cherry Hill, N
(609) 667-811

Urban Systems
Building Syste
3401 Tidewate
Fredricksburg,
(703) 371-344

USCO
P. O. Box 683
Richmond, Vir
(703) 288-311

g.
56164

Inc.
10710

dgs., Inc.
13120

Corp.
Road
26

ems
Valker/Parkersburg
inia 26101

RAS
Irnes, Inc.
700 Quest Boulevard Cremazie West
Montreal 303, Quebec, Canada
(514) 270-3161

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SEF c/o The Metropolitan Toronto
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(212) 486-9424

Star Manufacturing Co.
Box 94910
Oklahoma City, Oklahoma 73109
(405) 632-7711

Stirling Homex Corporation
1150 East River Road
Avon, New York 14414
(716) 926-2481

Stran Steel Corporation
Building Systems Subsidiary of
National Steel Corporation
2999 S. Wayside, P. O. Box 14205
(713) 644-3441

Townland Marketing and Development
1001 North Kings Highway
Cherry Hill, New Jersey 08034
(609) 667-8110

Urban Systems Development Corp.
Building Systems Division
3401 Tidewater Trail
Fredricksburg, Virginia 22401
(703) 371-3440

USCO
P. O. Box 6832
Richmond, Virginia 23230
(703) 288-3115

CHART A: CURRENT INDUSTRY CHARACTERISTICS

	location	ownership			primary activity					services				market areas	management system			aquisition methods			bidding options	
		public owned	privately owned	franchised	educational facilities	housing	multi-use	pre-engineered	other	arch./eng.	production	erection	management		open	closed	consortium	outright purchase	rent	lease purchase	performance bidding	traditional
ARMCO STEEL CORP.	oh	X		X	X		X	X	X	X	X	X	X	us and foreign	X			X	a	a	a	X
BIRDAIR STRUCTURES	ny	X			b				b	X	X	X	X	us and foreign		X		X				X
BUTLER MFG. CO.	mo	X		X	X		X	X	X	c	X	X	X	us and canada	X			X				X
CARLSON CORP.	ma	X	X		X			X		X	X	X	X	ma, ri, ct	X			X			X	X
COMPONENT BLDG. SYSTEMS LTD.	il		X		X	X	X		d	X			X	us and foreign				X				X
COMPONOFORM INC.	ma				X	X	X		d	X	X	X		n.e. us	X			X			X	X
DESCON/CONCORDIA	can		X			X				X	X		X	n.e. us and canada	X			X		X	X	X
DUANE RENTALS INC.	ny	X					X			X	X	X	X	n.e. us		X		X	X	X	X	X
GENERAL ELECTRIC	pa	X				X				X	X		X	n.e. and s.w. us		X		X			X	
HOUSING SYSTEMS INC.	ny	X				X				X	X	X	X	us and foreign		X		X			X	
INSTA BUILDINGS INC.	mi	X	X		X		X			X	X	X	X	michigan		X		X		X	X	X
JAL-DONN MODULAR BUILDINGS INC.	oh		X			X				X	X		X	ohio		X		X			X	X
KAISER DESIGNED FACILITIES CORP.	oh	X			X		X			X	X		X	west and midwest		X		X		X	X	X
LEVITT BUILDING SYSTEMS INC.	mi					X				X	X	X		midwest		X		X			X	X
LOCKHEED AIRCRAFT SERVICE CO.	ca	X				X				X	X	X	X	f		X		X			X	X
MACOMBER INC.	oh	X			X		X	X	g		X	X		us	X			X			X	X
MARSHALL ERDMAN AND ASSOCIATES INC.	wi		X		X	X		X	h	X	X	X	X	east and midwest		X		X		X	X	

a. varies with franchised dealer
b. athletic facilities, loft type spaces, etc.
c. no working drawings
d. offices retail facilities, etc.
e. 150 mile radius from plants in ma. and ri.
f. currently latin america only, planning a different building system for the u.s.
g. commercial, industrial

INDUSTRY CHARACTERISTICS

franchised	primary activity: educational facilities	housing	multi-use	pre-engineered	other	services: arch./eng.	production	erection	management	market areas	management system: open	closed	consortium	aquisition methods: outright purchase	rent	lease purchase	bidding options: performance bidding	traditional bidding	turnkey
X	X		X	X	X	X	X	X	X	us and foreign	X			X	a	a	a	X	
	b				b	X	X	X	X	us and foreign		X		X				X	
X	X		X	X	X	c	X	X	X	us and canada	X			X				X	
	X			X		X	X	X	X	ma, ri, ct	X			X			X	X	
	X	X	X		d	X			X	us and foreign				X				X	
	X	X	X		d	X	X	X		n.e. us	X			X			X	X	
		X				X	X		X	n.e. us and canada	X			X		X	X	X	X
			X			X	X	X	X	n.e. us		X		X	X	X	X	X	
		X				X	X		X	n.e. and s.w. us		X		X			X		X
		X				X	X	X	X	us and foreign		X		X			X		X
	X		X			X	X	X	X	michigan		X		X		X	X	X	
		X				X	X		X	ohio		X		X			X	X	
	X		X			X	X		X	west and midwest		X		X		X	X	X	X
		X				X	X	X		midwest		X		X			X	X	X
		X				X	X	X	X	f		X		X			X	X	
	X		X	X	g		X	X		us	X			X			X	X	
	X	X		X	h	X	X	X	X	east and midwest		X		X		X	X		X

f. currently latin america only, planning a different building system for the us.
g. commercial, industrial

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CHART A: CONTINUED

	location	ownership			primary activity					services				market areas	management system			aquisition methods	
		public owned	privately owned	franchised	educational facilities	housing	multi-use	pre-engineered	other	arch. / eng.	production	erection	management		open	closed	consortium	outright purchase	rent
MINNESERA LTD.	ny		X		X						X	X		ny. state		X		X	X
MODUFAB INC.	fl	X				X				X	X	X	X	us		X		X	
MODULAR STRUCTURES INC.	mn	X				X					X		X	200 mi from mn. plant	X			X	
MODULE COMMUNITIES INC.	ny		X	a	b	X				c	X	X	X	east, west midwest	X			d	
MONOLITHIC MASONRY BUILDINGS INC.	ny	f	X	c	X	X	X	X		X	X	X	X	us & canada	X	X		X	X
PANELFAB INTERNATIONAL CORP.	fl	X			X	X	X			X	X	X	X	eastern us		X		X	
PARKERSBURG BUILDING SYSTEMS	wv	X			X		X	X		X	X	X	X	us	X			X	
PORTABLE SCHOOLS INC.	ny		X		X						X	X		ny. state		X		X	
RAS	can	e			X								X	montreal	X			X	
SECTIONAL STRUCTURES INC.	ny	X			X	X	X			X	X	X	X	ct., mi., nj., ny., pa.		X		X	
SEF	can	e			X									toronto	X			X	
SHELLEY SYSTEMS	ny		X			X				X	X	X	X	north & northeast		X		X	
STAR MFG. CO.	ok			X			X	X		X	X	X	X	us	X			X	
STIRLING HOMEX CORP.	ny	X				X				X	X	X	X	us & foreign		X		X	
STRAN STEEL CORP.	tx	X		X	X		X	X		X	X	X	X	us & foreign	X			X	
TOWNLAND MARKETING AND DEVELOPMENT	nj		X			X	X			X	X		X	northeast & northwest	X			X	
URBAN SYSTEMS DEVELOPMENT CORP.	va		X			X				X	X	X	X	200 mi from va. plant		X		X	
USCO	va	X			X	X	X			X	X	X	X	east of the mississippi		X		X	

a. at a later date
b. in about 2 years
c. research only
d. by general contractor
e. state agency
f. now exploring possibilities

CENT
renss

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ership		primary activity					services				market areas	management system			aquisition methods			bidding options			
privately owned	franchised	educational facilities	housing	multi-use	pre-engineered	other	arch. / eng	production	erection	management		open	closed	consortium	outright purchase	rent	lease purchase	performance bidding	traditional bidding	turnkey	
X		X						X	X		ny. state		X		X	X	X		X		
			X				X	X	X	X	us		X		X			X		X	
			X					X		X	200 mi from mn. plant	X			X				X		
X	a	b	X				c	X	X	X	east, west midwest	X			d			X	X	X	
X	c	X	X	X	X		X	X	X	X	us & canada	X	X		X	X	X	X	X	X	
		X	X	X			X	X	X	X	eastern us		X		X		X	X	X		
		X		X	X		X	X	X	X	us	X			X			X	X		
X		X						X	X		ny. state		X		X		X				
		X								X	montreal	X			X			X			
		X	X	X			X	X	X	X	ct., mi., nj., ny., pa.		X		X		X		X		
		X									toronto	X			X			X			
X			X				X	X	X	X	north & northeast		X		X			X			
	X			X	X		X	X	X	X	us	X			X			X	X		
			X				X	X	X	X	us & foreign		X		X			X		X	
	X	X		X	X		X	X	X	X	us & foreign	X			X		X	X	X		
X			X	X			X	X		X	northeast & northwest	X			X			X		X	
X			X				X	X	X	X	200 mi from va. plant		X		X			X		X	
		X	X	X			X	X	X	X	east of the mississippi		X		X		X	X		X	

a general contractor
b agency
c exploring possibilities

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CHART B: PRODUCT DESCRIPTION – STRUCTURAL

		primary product						structural system					material				span limits			plan	story height		stack	
	location	educational facilities	housing	multi-use	pre-engineered	inflatable	other	frame	panel	module-box	space frame/truss	other	wood	concrete	steel	other	short	medium	long	free space	floor-ceiling	floor-floor	varies	
ARMCO STEEL CORP.	oh	X		X	X			X	X		X				X		a	a	a	140'(b)	up to 40'		X	
BIRDAIR STRUCTURES	ny					X						d				d			X	e			X	one
BUTLER MFG. CO.	mo	X		X	X			X			X	f			X		X	X	X	50'X50'	9'–22' (g)	add 3'–6"	X	1 to
CARLSON CORP.	ma	h		X								i				i	X	X	X	i	i	i		
COMPONENT BLDG. SYSTEMS LTD.	il	X	X	X				X							X		X	X		27'-6"X36'	i	i	X	
COMPONOFORM INC.	ma	X	X	X			X	X						X			X	X		32'X40'	i	i	X	30
DESCON / CONCORDIA	can	X						X	X					X			X			21'X27'-4"	8'-0"			22
DUANE RENTALS INC.	ny			X						X					X		X			12'X70'	8'-0"	9'-6"		3
GENERAL ELECTRIC	pa		X							X			X		X	X	X	X		12'X36'	8'-0"	9'-4"		2
HOUSING SYSTEMS INC.	ny		X							X				X				X		38'X38'	8'-0"	8'-6"		30
INSTA BUILDINGS INC.	mi	X		X						X					X			X		32'X38'	8', 10', 12'	add 1'-6"	X	3
JAL-DONN MODULAR BUILDINGS INC.	oh		X							X					X		X			12'X48'	7'-6", 8'-0"	12'-0"		3
KAISER DESIGNED FACILITIES CORP.	oh	X		X				a	a	a					X		X	X	X	50'X	9'-6"	13'-0"	X	3
LEVITT BUILDING SYSTEMS INC.	mi		X							X			X				X			12'X60'	8'-0"			2
LOCKHEED AIRCRAFT SERVICE CO.	ca		X						X					X			X	X	X	j	8', 12'		X	3
MACOMBER INC.	oh	k		k		k		X							X		X	X	X	130'X	up to 24'		X	3
MARSHALL ERDMAN AND ASSOCIATES INC.	wi	X	X		X		l.				X				X		X	X	X	i	i	i		

a. several structural systems available
b. available upon special request
c. currently one story, planning two story
d. air supported nylon, dacron, or fiberglas
e. practically unlimited
f. triodetic
g. in 1" increments, others on special order
h. only interested in private educational facs.
i. traditional design options
j. span limited by choice of roof system
k. structural system only
l. medical facilities

PRODUCT DESCRIPTION – STRUCTURAL

location	primary product						structural system					material				span limits			plan	story height			stackability	flexibility		
	educational facilities	housing	multi-use	pre-engineered	inflatable	other	frame	panel	module-box	space frame/truss	other	wood	concrete	steel	other	short	medium	long	free space	floor-ceiling	floor-floor	varies	number of stories	fixed	semi-fixed	removable
oh	X		X	X			X	X		X				X		a	a	a	140'(b)	up to 40'		X	c			X
ny					X						d				d			X	e			X	one			X
mo	X		X	X			X			X	f			X		X	X	X	50'x50'	9'-22' (g)	add 3'-6"	X	1 to 5			X
ma	h		X								i				i	X	X	X	i	i	i		i	X		
il	X	X	X				X							X		X	X		27'-6"x36'	i	i	X	i		X	
ma	X	X	X			X	X						X			X	X		32'x40'	i	i	X	30	X		
can	X						X	X					X			X			21'x27'-4"	8'-0"			22	X		
ny			X						X					X		X			12'x70'	8'-0"	9'-6"		3			X
pa		X							X			X		X	X	X	X		12'x36'	8'-0"	9'-4"		2		X	
ny		X							X				X				X		38'x38'	8'-0"	8'-6"		30	X		
mi	X		X						X					X			X		32'x38'	8', 10', 12'	add 1'-6"	X	3			X
oh		X							X					X		X			12'x48'	7'-6", 8'-0"	12'-0"		3			X
oh	X		X				a	a	a					X		X	X	X	50'x	9'-6"	13'-0"	X	3			X
mi		X							X			X				X			12'x60'	8'-0"			2		X	
ca		X						X					X			X	X	X	j	8', 12'		X	3	X		
oh	k		k		k		X							X		X	X	X	130'x	up to 24'		X	3	X		
wi	X	X		X		l.				X				X		X	X	X	i	i	i		i	l	i	i

ems available
request
nning two story
cron, or fiberglas

f. triodetic
g. in 1" increments, others on special order
h. only interested in private educational facs.
i. traditional design options
j span limited by choice of roof system
k. structural system only
l. medical facilities

CENTER FOR ARCHITECTURAL RESEARCH
rensselaer polytechnic institute troy, n.y.

CHART B: CONTINUED

	location	primary product						structural system					material				span limits			plan	story height		
		educational facilities	housing	multi-use	pre-engineered	inflatable	other	frame	panel	module-box	space frame / truss	other	wood	concrete	steel	other	short	medium	long	free space	floor-ceiling	floor-floor	varies
MINNESEPA LTD.	ny	X								X					X			X		60'x	9'-0"	11'-2"	
MODUFAB INC.	fl		X							X					X		X			24'X24'	8'-12'		
MODULAR STRUCTURES INC.	mn		X							X			X				X			12'X52'	7'-6"-8'		
MODULE COMMUNITIES INC.	ny		X						X					X			X	X	X	20'X32'	9'-6"		
MONOLITHIC MASONRY BUILDINGS INC.	ny	X	X	X	X			X	X	X				X			X	X	X	150' x	up to 30'		X
PANELFAB INTERNATIONAL CORP.	fl	X	X	X				X	X	X						a	X	X	X	90' x			X
PARKERSBURG BUILDING SYSTEMS	wv	X		X	X			X	X						X		X	X	X	120' x	up to 24'		X
PORTABLE SCHOOLS INC.	ny	X								X					X			X		24'X45'			
RAS	can	X						X						X				X		20'X60'	9'-4"-22'	add 4'-0"	
SECTIONAL STRUCTURES INC.	ny	X	X	X						X			X		X			X		24'X60'	9'-6"		
SEF	can	X		X			X				X				X		X	X	X	65'x	10', 14', 18', & 24'	add 4'-0"	X
SHELLEY SYSTEMS	ny		X							X				X			X			12'X52'	8'-0"	8'-9"	
STAR MFG. CO.	ok			X	X			X							X		X	X	X	almost unlimited	8'-20'		X
STIRLING HOMEX CORP.	ny		c							X			X	X	X		X			26'X36'	7'-6"-8'		
STRAN STEEL CORP.	tx	X		X	X			X				d			X		X	X	X	35'X60' 130'X25'	8'-0 to 28'	add 3'-0'	
TOWNLAND MARKETING AND DEVELOPMENT	nj		X							e	e		e	e	e	e		X		sls 20'X48'	sls 20'-30'		
URBAN SYSTEMS DEVELOPMENT CORP.	va		X							X			X				X			12'X52'			
USCO	va	X	c	X				X		X			X	X				X		44'X	8'-9'-6"		

a. exterior envelope, roof, and partitions are 2", 3", or 4" al. skin honeycomb
b. can go to 5 stories if top floor is academic only
c. two systems available - wood and concrete
d. pre-engineered
e. townland has two systems - a concrete frame (sls) onto which 2 and 3 story infill housing units are placed, the infill units are produced by other members of the townland consortium from various materials

TINUED

primary product						structural system					material				span limits			plan	story height			stackability	flexibility			
educational facilities	housing	multi-use	pre-engineered	inflatable	other	frame	panel	module-box	space frame / truss	other	wood	concrete	steel	other	short	medium	long	tree space	floor-ceiling	floor-floor	varies	number of stories	fixed	semi-fixed	removable	
X								X					X			X		60'x	9'-0"	11'-2"		3			X	
	X							X					X		X			24'x24'	8'-12'			3			X	
	X							X			X				X			12'x52'	7'-6"-8'			1			X	
	X						X					X			X	X	X	20'x32'	9'-6"			25		X		
X	X	X	X			X	X	X				X			X	X	X	150' x	up to 30'		X	20				
X	X	X				X	X	X						a	X	X	X	90' x			X				X	
X		X	X			X	X						X		X	X	X	120'x	up to 24'		X	2		X	X	
X								X					X			X		24x45'				1			X	
X						X						X				X		20'x60'	9'-4"-22'	add 4'-0"		4-5(b)			X	
X	X	X						X			X		X			X		24'x60'	9'-6"			3			X	
X		X			X				X				X		X	X	X	65'x	10', 14', 18', & 24'	add 4'-0"	X	4	X			
	X							X				X			X			12'x52'	8'-0"	8'-9"		24	X			
		X	X			X							X		X	X	X	almost unlimited	8'-20'		X	1			X	
	c							X			X	X	X		X			26'x36'	7'-6"-8'			wood-2 concrete-20		X		
X		X	X			X				d			X		X	X	X	35'X60' 130'X25'	8'-0 to 28'	add 3'-0'	X	2			X	
	X							e	e		e	e	e	e		X		sls 20'x48'	sls 20'-30'		X	15 stories (5-3 story units)	X			
	X							X			X				X			12'x52'				wood-2		X		
X	c	X				X		X			X	X				X		44'x	8'-9'-6"		X	wood concrete		X		

ithons are 2", 3", or 4" al. skin honeycomb
is academic only
nd concrete

e. townland has two systems - a concrete frame (sls) onto which 2 and 3 story infill housing units are placed, the infill units are produced by other members of the townland consortium from various materials

CENTER FOR ARCHITECTURAL RESEARCH
rensselaer polytechnic institute troy, n.y.

CHART C: SUB-SYSTEM CHARACTERISTICS

	location	foundation				floor system				floor fin.		ceiling system							clg. matl	roof system						envelope system						partition system				partition material						stair system				ele en
		+ or –	slab	perimeter	piles	+ or –	concrete	concrete on metal	wood	unlimited	limited	+ or –	concrete	plaster on wood	plaster on metal	suspended ceiling	integrated with lights	unlimited	limited	+ or –	built-up	metal	other	sloped	flat	+ or –	pre-cast concrete	masonry	wood	metal	+ or –	fixed	flexible	on a module	plaster on wood	plaster on metal	metal	masonry	concrete	+ or –	concrete	steel	wood	+ or –	
ARMCO STEEL CORP.	oh	–	X			–				X		–								+		X		X	X	+				X	+		X	X			X			–				–	
BIRDAIR STRUCTURES	ny	+	X	X		a					X	b							X							c					–									–					
BUTLER MFG. CO.	mo	–	X	X	X	+	.	X		X		+					X		X	+	X	X		X	X	+	d	d	d	X	+		X	X			X			–				–	
CARLSON CORP.	ma	–				–						–								–											–									–					–	
COMPONENT BLDG. SYSTEMS LTD.	il	–				+		X		X		+				X	X			+		X			X	+				X	+		X			X				–				–	
COMPONOFORM INC.	ma	–				+	X			X		+	X						X		+	X				+	X	e	e	e	+		X					X		–	X	e	e	+	X
DESCON / CONCORDIA	can	–				+	X				X	+	X						X		+	X			X	+	X				+	X			X					–	X			+	X
DUANE RENTALS INC.	ny	–				+			X	X		+		X					X		+	X		X		+		X	X	X	+	X		X						–				–	
GENERAL ELECTRIC	pa	–		X	X	+			X	X		+			X				X		+	X		X	X	+		X	X		+	X			X					+		X		–	
HOUSING SYSTEMS INC.	ny	+	X			+	X			X		+	X							X	+	X			X	+	X				+		X			X			X		+	X	X	X	–	X
INSTA BUILDINGS INC.	mi	–				+		X				+				X			X		+	X				+			X		+	X			X	X	X			+				–	
JAL-DONN MODULAR BUILDINGS INC.	oh	–				+			X	X		+			X				X		+	X				+				X	+	X			X					+				–	
KAISER DESIGNED FACILITIES CORP.	oh	–				+			X	X		+				X			X		+	X	X			X	+				X	+	X	X	X		X	X			–				–	
LEVITT BUILDING SYSTEMS INC.	mi	–	X	X		+			X	X		+		X					X		+	X			X		+		X	X	X	+	X			X					+		X	X	–	
LOCKHEED AIRCRAFT SERVICE CO.	ca	–	X			+	X			X		+	X			X			X		+			f		X	+	X				+	X			X				X	–				–	
MACOMBER INC.	oh	g				g						–									g				X	X	g					–									–				–	
MARSHALL ERDMAN AND ASSOCIATES INC.	wi	+		X		+		X		X		+				X	X		X	+	X	X			X	X	+				X	+		X			X			+	X	X		+	

a. normally concrete or earth
b. can provide suspended acoustical treatment
c. various skin materials – nylon, rayon, fiberglas
d. system can accept various types of enclosures
e. other materials possible
f. urethane foam
g. structural system only

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TEM CHARACTERISTICS

properties	floor system				floor fin.		ceiling system							clg. mutl	roof system						envelope system						partition system				partition material					stair system				elevator enclosure				elec. mech	heating, vent. and air cond.					
	+ or -	concrete	concrete on metal	wood	unlimited	limited	+ or -	concrete	plaster on wood	plaster on metal	suspended ceiling	integrated with lights	unlimited	limited	+ or -	built-up	metal	other	sloped	flat	+ or -	pre-cast concrete	masonry	wood	metal	+ or -	fixed	flexible	on a module	plaster on wood	plaster on metal	metal	masonry	concrete	+ or -	concrete	steel	wood	+ or -	concrete	masonry	metal	+ or -	+ or -	+ or -	ceiling duct	floor duct	composit unit	wall unit	other
	-				X		-								+		X		X	X	+				X	+			X	X		X			-				-				-	-	-					
	a					X	b							X							c					-									-								+	+	+			X		
	+		X			X	+					X		X	+	X	X		X	X	+	d	d	d	X	+		X	X			X			-				-				-	-	-					
	-						-								-											-									-								-	-	-					
	+		X			X	+				X	X			+		X			X	+				X	+		X			X			-				-				-	-	+					
	+	X				X	+	X						X	+	X					+	X	e	e	e	+		X					X		-				+	X	e	e	-	-	-					
	+	X				X	+	X							X	+	X				X	+	X				+	X				X			+	X			+	X			+	+	+					
	+			X	X		+		X					X		+	X			X		+		X	X	X	+	X				X			-				-				+	+	+	X	X			
	+			X	X		+			X				X		+	X			X	X	+		X	X		+	X				X			+		X		-				÷	+	+		X		X	
	+	X			X		+	X							X	+	X				+	X				+		X				X			+	X	X	X	-	X	X	X	+	+	+	X	X		X	
	+		X				+				X			X		+	X				+			X		+	X				X	X	X		+				-				+	+	+					
	+			X	X		+			X				X		+	X			X		+		X	X	X	+	X				X			+		X		-				+	+	+					
	+			X	X		+				X			X		+	X	X			X	+				X	+	X				X			-				-				+	+	+					
	+			X	X		+		X					X		+	X			X		+		X	X	X	+	X				X			+		X	X	-				+	+	+	X	X			
	+	X			X		+	X			X			X		+		f		X	+	X				+	X				X			-				-				-	-	-					
	g						-								g				X	X	g					-									-				-				-	-	-					
	+		X			X	+				X	X		X	+	X	X		X	X	+				X	+		X				X			+	X	X		+		X		+	+	+	X				

f. urethane foam
g. structural system only

atment
, fiberglas
closures

CHART C: CONTINUED

	location	foundation				floor system				floor fin		ceiling system					clg. matl.		roof system					envelope system					partition system				partition material					stair system			
		+ or –	slab	perimeter	piles	+ or –	concrete	concrete on metal	wood	unlimited	limited	+ or –	concrete	plaster on wood	plaster on metal	suspended ceiling	integrated with lights	unlimited	limited	+ or –	built-up	metal	other	sloped	flat	+ or –	pre-cast concrete	masonry	wood	metal	+ or –	fixed	flexible	on a module	plaster on wood	plaster on metal	metal	masonry	concrete	+ or –	concrete	steel
MINNESEPA LTD.	ny	–	X			+			X			+				X		X	+		X		X		+				X	+	X			X					–			
MODUFAB INC	fl	–				+			X			+				X		X		+	X			X	X	+		X	X	X	+	X				X				–			
MODULAR STRUCTURES INC.	mn	–				+			X			+		X				X		+	X			X		+			X		+		X		X								
MODULE COMMUNITIES INC.	ny	–				+	X			X		+	X				X	X		+	X				X	+	X				+	X	X					X	+	X			
MONOLITHIC MASONRY BUILDINGS INC.	ny	+	X		X	+	X			X		+	X					X		+	X				X	+	X	X			+	X					X		+				
PANELFAB INTERNATIONAL CORP.	fl	–				+	X		X			+				X		X		+			X	X		b					+	X		b					–				
PARKERSBURG BUILDING SYSTEMS	wv	–	X	X		+		X		X		+			X	X		X		+	X	X		X		+				X	+		X			X	X		–				
PORTABLE SCHOOLS INC.	ny	–				+		X		X		+				X		X		+		X			X	+				X	+	X				X			–				
RAS	can	–				+	X			X		+				X	X		X	–					X	–					+	X	X	X			X			–				
SECTIONAL STRUCTURES INC.	ny	–				+			X	X		+		X		X		X		+	X					+				X	+		X		X					+		X	X
SEC	can	–				+		X		X		+				X	X		X	+	X				X	+	X				+	X	X	X			X	X		–				
SHELLEY SYSTEMS	ny	–				+	X			X		+	X					X		+	X				X	+	X				+	X			X					–				
STAR MFG. CO.	ok	–	X	X	X	+	X			X		–						X		+		X		X		+				X	–									–				
STIRLING HOMES CORP.	ny	–				+	X			X		+			X			X		+	X				X	+	X				+	X			X			X	+	X			
STRAN STEEL CORP.	tx	–	X	X	X	+	X			X		+				X		X		+	X	X		X	X	+	d	d	d	X	+	X				X				–				
TOWNLAND MARKETING AND DEVELOPMENT	nj	+			X	+	X																																–				
URBAN SYSTEMS DEVELOPMENT CORP.	va	–				+			X	X		+		X				X		+	X			X	X	+			X		+	X			X					+				X
USCO	va	–				+			X	X		+			X			X		+	X			X		+		X	X	X	+	X	X			X				+				

a. partially – conduit and boxes
b. aluminum skin honeycomb
c. service and utilities supplied to each housing unit through vertical and horizontal utility ducts
d. system accepts various enclosures

NTINUED

foundation				floor system				floor fin	ceiling system					clg mdl.	roof system					envelope system				partition system			partition material				stair system			elevator enclosure			elec. mech	heating, vent and air cond					
+ or –	slab	perimeter	piles	+ or –	concrete	concrete on metal	wood	unlimited	limited	+ or –	concrete	plaster on wood	plaster on metal	suspended ceiling	integrated with lights	unlimited	limited	+ or –	built-up	metal	other	sloped	flat	+ or –	pre-cast concrete	masonry	wood	metal	+ or –	fixed	flexible	on a module	plaster on wood	plaster on metal	metal	masonry	concrete	+ or –	concrete	steel	wood	+ or –	concrete	masonry	metal	+ or –	+ or –	+ or –	ceiling duct	floor duct	composit unit	wall unit	other	
–	X			+			X			+				X			X	+		X		X		+				X	+	X			X					–							+	+	+						
–				+			X			?				X		X		+	X			X	X	+			X	X	+	X			X					–							+	+	+						
–				+			X			+		X				X		+	X			X		+			X		+			X													+	+	+						
–				+	X			X		+	X				X	X		+	X				X	+	X				+	X	X					X	+	X			+	X		a		–							
+	X		X	–	X			X		+	X					X		+	X				X	+	X	X			+	X				X			+				+	X					+		c						
–				+	X		X			+				X	X			+			X	X		b					+	X		b					–							–	–	–						
–	X	X		+		X		X		+			X	X		X		+	X	X		X		+				X	+		X			X	X	–				–			–	–	–						
–				+		X		X		+				X			X	+		X			X	+				X	+	X				X		–				–				+	+	+						
–				+	X			X		+				X	X		X	–				X		+				X	+	X	X	X		X		–				–				+	+	+	X					
–				+			X	X		+		X		X				+						+				X	+		X		X			+		X	–				–				+	+	+	X			X		
–				+	X			X		+	X					X		+	X					+	X				+	X				X			–				–				+	+	+						
–	X	X	X	+	X			X		–						X		+		X		X		+				X	–								–				–				–	–	–						
–				+	X			X		+		X				X		+	X				X	+					+	X				X			+		X	+				–				+	+	+						concrete system described here
–	X	X	X	+	X			X		+				X		X		+	X	X		X	X	+	d		d	X	+	X					X		–				–				–	–	–						
+			X	+	X																																–				+				c	c							sls system described here
–				+			X	X		+		X						+	X			X	X	+			X		+		X					+				+	X			+	+	+	X					concrete system described here
–				+			X	X		+			X					+	X			X		+			X		+			X					+				+				+	+	+						wood system described here

d. system accepts various enclosures

to each housing
ontal utility ducts

CHART D: PRODUCTION-DELIVERY-ERECTION CHARACTERISTICS

	location	fabrication				fabrication quantity	transportation				range		erection				erection quantity	c
		off-site	on-site	combination	by local resources		by company	subcontracted	road	other	limit	cost above limit	by product manufacturer	subcontracted	technical assistance	franchise dealer		
ARMCO STEEL CORP.	oh	X				unlimited		X	X	X	none		X	X	X	X	unlimited	X
BIRDAIR STRUCTURES	ny	X				4-5 million sq. ft. per year		X	X		none		X	X			100' X 200' 2-3 days	X
BUTLER MFG. CO.	mo	X				15 million sq. per year				a						X	100,000 sq. ft. in 4 weeks	
CARLSON CORP.	ma			X		varies with local producer		X	X				X					X
COMPONENT BLDG. SYSTEMS LTD.	il			X			X				1000 miles		X	X	X		225,000 sq. ft. in 6 months	X
COMPONOFORM INC.	ma	X				25 million sq. ft. per year per shift	X	X			175 miles		X	X				X
DESCON / CONCORDIA	can	X			X	varies with producer			X	a	100 mile radius of local prod.			X	X		varies with producer	X
DUANE RENTALS INC.	ny	X				2 units per week	X	X	X		700 mile radius from pa. plant		X					X
GENERAL ELECTRIC	pa	X				16 modules a day		X	X	a	150 mile radius from pa.& ca. plant	$1.00/mi/module		X	X		1 unit 20-25 man hours	X
HOUSING SYSTEMS INC.	ny		X			7000 sq. ft. per day	b				b	b	X				25,000 sq. ft. in 16-18 weeks	X
INSTA BUILDINGS INC.	mi	X				1 module a day		X	X	X	250 mile radius from oh. plant	$150/module	X				12,000 sq. ft. in 8 weeks	X
JAL-DONN MODULAR BUILDINGS INC.	oh	X				4 modules a day		X	X		100 mile radius from oh. plant	$1.15/mi/module		X	X		9-18 units a day	X
KAISER DESIGNED FACILITIES CORP.	oh	X	X			30,000 ft. sq. day		X	X		1000-1200 miles from ca.& oh. plant	$1.00/mi/module		X	X		20 modules a day	X
LEVITT BUILDING SYSTEMS INC.	mi	X				2,000 houses per year		X	X		300 mile radius from mi. plant		X				1 unit a day per crew	X
LOCKHEED AIRCRAFT SERVICE CO.	ca		X								none				X			X
MACOMBER INC.	oh			X			X		X	a	none			X	X			X
MARSHALL ERDMAN AND ASSOCIATES INC.	wi			X		no limit	X		X		east, south & midwest		X				60,000 sq. ft. in 5 months	X

a. by rail
b. mobile factory

CENTER FOR
rensselaer polyte

ODUCTION - DELIVERY - ERECTION CHARACTERISTICS

fabrication				fabrication quantity	transportation				range		erection				erection quantity	co-ordination					
off-site	on-site	combination	by local resources		by company	subcontracted	road	other	limit	cost above limit	by product manufacturer	subcontracted	technical assistance	franchise dealer		by company	independant construction manager	owner's architect	general contractor	franchise dealer	
X				unlimited		X	X	X	none		X	X	X	X	unlimited	X	X	X	X	X	
X				4-5 million sq. ft. per year		X	X		none		X	X			100'x 200' 2 - 4 days	X					
X				15 million sq. per year				a						X	100,000 sq. ft. in 4 weeks					X	
		X		varies with local producer		X	X				X					X					
		X			X				1000 miles		X	X	X		225,000 sq. ft. in 6 months	X			X		
X				25 million sq. ft. per year per shift	X	X			175 miles		X	X				X					
X			X	varies with producer			X	a	100 mile radius of local producer			X	X		varies with producer	X					
X				2 units per week	X	X	X		700 mile radius from pa. plant		X					X					
X				16 modules a day		X	X	a	150 mile radius from pa.& ca. plant	$1.00/mi/module		X	X		1 unit 20-25 man hours	X					
	X			7000 sq. ft. per day	b				b	b	X				25,000 sq. ft. in 16-18 weeks	X			X		
X				1 module a day		X	X	X	250 mile radius from oh. plant	$150/module	X				12,000 sq. ft. in 8 weeks	X					
X				4 modules a day		X	X		100 mile radius from oh. plant	$1.15/mi/module		X	X		9-18 units a day	X					
X	X			30,000 ft. sq. day		X	X		1000-1200 miles from ca.& oh. plant	$1.00/mi/module		X	X		20 modules a day	X					
X				2,000 houses per year		X	X		300 mile radius from mi. plant		X				1 unit a day per crew	X			X		
	X								none				X			X					
		X			X		X	a	none			X	X			X					
		X		no limit	X		X		east, south & midwest		X				60,000 sq. ft. in 5 months	X					

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CHART D: CONTINUED

	location	fabrication				fabrication quantity	transportation				range		erection				erection quantity
		off-site	on-site	combination	by local resources		by company	subcontracted	road	other	limit	cost above limit	by product manufacturer	subcontracted	technical assistance	franchise dealer	
MINNESEPA LTD.	ny	X				2 modules a day	X		X		ny. state	$1.00/mi./module	X				4 classroo 15 days
MODUFAB INC.	fl	X				8 modules a day	X		X			$1.25/mi./ module	X				2-3 modu 2 days
MODULAR STRUCTURES INC.	mn	X				6-8 modules a day		X	X		200 miles from mn. plant	$1.50/mi./ module	X				6 hours p
MODULE COMMUNITIES INC.	ny	X				800,000 sq. ft. per yr. per plant	X		X		50-100 miles from plant	$ .25/sq. ft. of floor area	X				2000 sq. f
MONOLITHIC MASONRY BUILDINGS INC.	ny	X				not limited	X		X		500 miles from plant	$1.00/mi./ module	X				4 classroo
PANELFAB INTERNATIONAL CORP.	fl			X		50,000 sq. ft. a day		X	X		us and foreign		X	X	X		1.5 hours/ ft. of exter
PARKERSBURG BUILDING SYSTEMS	wv	X				not limited	X	X	X		us			X		X	60' X 100' 45-60 da
PORTABLE SCHOOLS INC.	ny	X				4 classrooms 40-60 days	X	X	X		ny. state		X				
RAS	can			X		60,000 sq. ft. a mo.		X	X		varies with local manufacturer		X				100,000 sq.
SECTIONAL STRUCTURES INC.	ny	X				8 modules a day			X				X	X			15,000 sq.
SEF	can			X		60,000 sq. ft. in 7 months		X	X					X	X		60,000 sq. 7 months
SHELLEY SYSTEMS	ny	X				2000 units a year	X		X				X				4 units a
STAR MFG. CO.	ok	X				3 million sq. ft. a year		X	X	a	no limit					X	
STIRLING HOMEX CORP.	ny			X		100 units a mo.		X	X	a	900 miles from ny. plant			X	X		3 hours/ u (excluding
STRAN STEEL CORP.	tx	X				not limited	X	X	X	a						X	varies wi franchiser
TOWNLAND MARKETING AND DEVELOPMENT	nj			X		1 bay a day		X	X		250 mile radius from producer			X	X		1 bay a d
URBAN SYSTEMS DEVELOPMENT CORP.	va	X				wood-5000 s.f. day		X	X		200 mile radius from plant		X				4-6 hours/
USCO	va	X				20 modules a day	X		X		east of the mississippi	$1.00-1.10/mile/ module	X				9-10 modu (excluding

a. by rail

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fabrication quantity	transportation				range		erection				erection quantity	co-ordination					
	by company	subcontracted	road	other	limit	cost above limit	by product manufacturer	subcontracted	technical assistance	franchise dealer		by company	independent construction manager	owner's architect	general contractor	franchise dealer	
2 modules a day	X		X		ny. state	$1.00/mi./module	X				4 classrooms in 15 days	X					
8 modules a day	X		X			$1.25/mi/module	X				2-3 modules in 2 days	X					
6-8 modules a day		X	X		200 miles from mn. plant	$1.50/mi/module	X				6 hours per unit	X					
300,000 sq. ft. per yr. per plant	X		X		50 - 100 miles from plant	$ .25/sq. ft. of floor area	X				2000 sq. ft a day	X					
not limited	X		X		500 miles from plant	$1.00/mi/module	X				4 classrooms/day	X					
50,000 sq. ft. a day		X	X		us and foreign		X	X	X		1.5 hours/linear ft. of exterior wall	X			X		
not limited	X	X	X		us			X		X	60' X 100' 45-60 days					X	
classrooms 30-60 days	X	X	X		ny. state		X					X					
50,000 sq. ft. a mo.		X	X		varies with local manufacturer		X				100,000 sq. ft. a mo.			X			
modules a day			X				X	X			15,000 sq. ft. a day	X					
50,000 sq. ft. in months		X	X					X	X		60,000 sq. ft. in 7 months		X				
2000 units a year	X		X				X				4 units a day	X					
million sq. ft. year		X	X	a	no limit					X						X	
00 units a mo.		X	X	a	900 miles from ny. plant			X	X		3 hours/unit (excluding s.work)	X					
not limited	X	X	X	a						X	varies with franchiser					X	
bay a day		X	X		250 mile radius from producer			X	X		1 bay a day	X					sis system only
wood-5000 s.f. day		X	X		200 mile radius from plant		X				4-6 hours/module	X					
0 modules a day	X		X		east of the mississippi	$1.00-1.10/mile/module	X				9-10 modules/day (excluding s. work)	X					

CHART E: EDUCATIONAL FACILITIES EXPERIENCE AND COST DATA

	location	education space type					location	types of schools			mechanical complexity		cost data	contractural preference						
		classrooms only	entire new schools	additions	loft-type space	other		public	private	university	simple	complex		multiple contract	single contract	turnkey	negotiated	performance type	other	
ARMCO STEEL CORP.	oh		X	X	X		us & canada	X	X	X		X	$10.00 sq. ft. and up		X	X	X	X		6
BIRDAIR STRUCTURES	ny				X		us			X	X		$2.00-7.00 sq. ft.		X					7-
BUTLER MFG. CO.	mo		X	X	X		us	X	X	X		X	$15.00-30.00 sq. ft. (a)						b	
CARLSON CORP.	ma		X		X		n.e. us		X			X	guranteed budget costs				X			gu
COMPONENT BLDG. SYSTEMS LTD.	il		X	X				X	X	X	X				X	X	X	X		90
COMPONOFORM INC.	ma		X	X			n.e. us	X	X	X		X	$5.00-6.00 sq.ft.	X						
DESCON / CONCORDIA	can																			
DUANE RENTALS INC.	ny																			
GENERAL ELECTRIC	pa																			
HOUSING SYSTEMS INC.	ny		X				us & foreign	X	X	X	X		$10.00-25.00 sq. ft.					X		10-
INSTA BUILDINGS INC.	mi		X	X	X		michigan	X		X		X	$23.50 sq.ft. (includes s. work)		X					8 w
JAL-DONN MODULAR BUILDINGS INC.	oh																			
KAISER DESIGNED FACILITIES CORP.	oh		X	X	X		n.e., midwest	X		X			$12.00-24.00 sq. ft.		X					sto oth
LEVITT BUILDING SYSTEMS INC.	mi																			
LOCKHEED AIRCRAFT SERVICE CO.	ca																			
MACOMBER INC.	oh		X	X	X		us	X	X	X		X						X		
MARSHALL ERDMAN AND ASSOCIATES INC.	wi		X	X	X		east, south & midwest	X			X		$15.00-18.00 sq. ft. inc. fees		X	X	X	X		60,0

a. structure $1.50-2.00 sq. ft. erected
lighting and acoustical ceiling (100 f.c.) $1.00 ft. sq.
b. most arrangements are acceptable, butler bids structure and lighting/ceiling

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DUCATIONAL FACILITIES EXPERIENCE AND COST DATA

education space type					location	types of schools			mechanical complexity		cost data	contractural preference						delivery time after contract
classrooms only	entire new schools	additions	loft-type space	other		public	private	university	simple	complex		multiple contract	single contract	turnkey	negotiated	performance type	other	
	X	X	X		us & canada	X	X	X		X	$10.00 sq. ft. and up		X	X	X	X		6 weeks
			X		us			X	X		$2.00-700 sq. ft.		X					7-11 weeks
	X	X	X		us	X	X	X		X	$15.00-30.00 sq. ft. (a)						b	
	X		X		n.e. us		X			X	guranteed budget costs				X			guranteed
	X	X				X	X	X	X				X	X	X	X		90 days
	X	X			n.e. us	X	X	X		X	$5.00-6.00 sq.ft.	X						
	X				us & foreign	X	X	X	X		$10.00-25.00 sq. ft.					X		10-12 weeks
	X	X	X		michigan	X		X		X	$23.50 sq.ft. (includes s.work)		X					8 weeks
	X	X	X		n.e., midwest	X		X			$12.00-24.00 sq. ft.		X					stock units-immediate others-60 to 90 days
	X	X	X		us	X	X	X		X						X		
	X	X	X		east, south & midwest	X			X		$15.00-18.00 sq. ft. inc. fees		X	X	X	X		60,000 sq. ft. - 5 months

: erected
lling (100 f.c.) $1.00 ft. sq.
ceptable, butler bids
iling

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CHART E: CONTINUED

	location	education space type					location	types of schools			mechanical complexity		cost data	contractural prefere				
		classrooms only	entire new schools	additions	loft-type space	other		public	private	university	simple	complex		multiple contract	single contract	turnkey	negotiated	performance type
MINNESEPA LTD.	ny	X		X			ny. state	X			X		$18.00-26.00 per sq. ft.		X			
MODUFAB INC.	fl																	
MODULAR STRUCTURES INC.	mn																	
MODULE COMMUNITIES INC.	ny																	
MONOLITHIC MASONRY BUILDINGS INC.	ny	X	X	X	X	X	us	X	X	X	X		on request		X	X		X
PANELFAB INTERNATIONAL CORP	fl		X	X	X		6000 rooms throughout us					X	$10.00 25.00 per sq. ft.					X
PARKERSBURG BUILDING SYSTEMS	wv		X	X	X		ny., pa., etc.				X		$10.00-25.00 per sq. ft		X		X	
PORTABLE SCHOOLS INC.	ny	X					ny. state				X				X			
RAS	can		X	X			montreal can.	X				X	$16.50 per sq. ft.					X
SECTIONAL STRUCTURES INC.	ny		X	X			ct., mi., ny., etc.	X		X			$16.00-18.00/s.f. (excludes s.work)		X			
SEF	can		X	X	X		toronto can.	X			X		$19.10 per sq. ft.					X
SHELLEY SYSTEMS	ny																	
STAR MFG. CO.	ok		X	X	X		us	X	X	X	X		varies		/		X	X
STIRLING HOMEX CORP	ny																	
STRAN STEEL CORP.	tx		X	X	X			X	X	X		X	$ 9.00 per sq. ft.		X	X	X	
TOWNLAND MARKETING AND DEVELOPMENT	nj																	
URBAN SYSTEMS DEVELOPMENT CORP	va																	
USCO	va		X	X			eastern us	X	X	X		X	$10.00-25.00 per sq. ft.		X			

a. newly formed company

CB
re

NTINUED

education space type					location	types of schools			mechanical complexity		cost data	contractural preference						delivery time after contract
classrooms only	entire new schools	additions	loft-type space	other		public	private	university	simple	complex		multiple contract	single contract	turnkey	negotiated	performance type	other	
X		X			ny. state	X			X		$18.00-26.00 per sq. ft.		X					1-10 classrooms - 45 days
X	X	X	X	X	us	X	X	X	X		on request		X	X		X		90 days
	X	X	X		6000 rooms throughout us					X	$10.00-25.00 per sq. ft.					X		60-90 days
	X	X	X		ny., pa., etc.				X		$10.00-25.00 per sq. ft		X		X			4-6 weeks
X					ny. state				X				X					
	X	X			montreal can.	X				X	$16.50 per sq. ft.					X		
	X	X			ct., mi., ny., etc.	X		X			$16.00-18.00/s.f. (excludes s. work)		X					
	X	X	X		toronto can.	X			X		$19.10 per sq. ft.					X		7-10 mo. entire
	X	X	X		us	X	X	X	X		varies		X		X	X		6-9 weeks
	X	X	X			X	X	X		X	$ 9.00 per sq. ft.		X	X	X			6-10 weeks
	X	X			eastern us	X	X	X		X	$10.00-25.00 per sq. ft.		X					

CHART F: INTEREST AND CONDITIONS CHARACTERISTICS

	location	space types				conditions					general interest			remarks
		new schools	loft type	classrooms	any type	guranteed market	guranteed quantity	single contract	turnkey	minimum quantity	interested	doubtful	not interested	
ARMCO STEEL CORP.	oh				X						X			
BIRDAIR STRUCTURES	ny		X				X				X			
BUTLER MFG. CO.	mo				X						X			
CARLSON CORP.	ma	X					X	X		$1,000,000			a	
COMPONENT BLDG. SYSTEMS LTD.	il	X	X	X	X	X	X	X	X	50,000 sq. ft.	X			
COMPONOFORM INC.	ma				X			X		5000 sq. ft.	X			
DESCON / CONCORDIA	can					X						X		
DUANE RENTALS INC.	ny					X						X		
GENERAL ELECTRIC	pa					X				$20,000,000/yr.	X			
HOUSING SYSTEMS INC.	ny	X		X			X			50,000 sq. ft.	X			
INSTA BUILDINGS INC.	mi				X		X			$24,000	X			
JAL-DONN MODULAR BUILDINGS INC.	oh					X					X			
KAISER DESIGNED FACILITIES CORP.	oh				X			X			X			
LEVITT BUILDING SYSTEMS INC.	mi					X						X		
LOCKHEED AIRCRAFT SERVICE CO.	ca						X			30,000 sq. ft.		X		
MACOMBER INC.	oh				X		X			3200 sq. ft.	X			
MARSHALL ERDMAN AND ASSOCIATES INC.	wi	X	X					X	X	10,000 sq. ft.	X			

a. not interested in public school facilities due to complex legal implications

INTEREST AND CONDITIONS CHARACTERISTICS

location	space types				conditions					general interest			remarks
	new schools	loft type	classrooms	any type	guranteed market	guranteed quantity	single contract	turnkey	minimum quantity	interested	doubtful	not interested	
oh				X						X			
ny		X				X				X			
mo				X						X			
ma	X					X	X		$1,000,000			a	
il	X	X	X	X	X	X	X	X	50,000 sq. ft.	X			
ma				X			X		5000 sq. ft.	X			
can					X						X		
ny					X						X		
pa					X				$20,000,000/yr.	X			
ny	X		X			X			50,000 sq. ft.	X			
mi				X		X			$24,000	X			
oh					X					X			
oh				X			X			X			
mi					X						X		
ca						X			30,000 sq. ft.		X		
oh				X		X			3200 sq. ft.	X			
wi	X	X					X	X	10,000 sq. ft.	X			

olic school facilities
implications

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CHART F: CONTINUED

	location	space types				conditions					general interest			remarks
		new schools	loft type	classrooms	any type	guranteed market	guranteed quantity	single contract	turnkey	minimum quantity	interested	doubtful	not interested	
MINNESEPA LTD.	ny		X					X			X			
MODUFAB INC.	fl							X				X		
MODULAR STRUCTURE INC.	mn											X		
MODULE COMMUNITIES INC.	ny					X			X	100,000 sq. ft	X			capable of partcipating in educational space
MONOLITHIC MASONRY BUILDINGS INC.	ny	X		X	X			X	X		X			
PANELFAB INTERNATIONAL CORP.	fl				X					7000 sq. ft of panels	X			
PARKERSBURG BUILDING SYSTEMS	wv				X					24' X 36'	X			
PORTABLE SCHOOLS INC.	ny			X				X			X			
RAS	can	X		X		X						X		
SECTIONAL STRUCTURES INC.	ny	X		X				X			X			
SEF	can				X	X						X		
SHELLEY SYSTEMS	ny					X								
STAR MFG. CO.	ok				X						X			
STIRLING HOMEX CORP.	ny					X				200 units		X		
STRAN STEEL CORP.	tx				X						X			
TOWNLAND MARKETING AND DEVELOPMENT	nj						X			10 bays (sls')	X			
URBAN SYSTEMS DEVELOPMENT CORP.	va								X		X			
USCO	va	X		X				X		24' X 30'	X			

F: CONTINUED

	location	space types: new schools	space types: loft type	space types: classrooms	space types: any type	conditions: guranteed market	conditions: guranteed quantity	conditions: single contract	conditions: turnkey	conditions: minimum quantity	general interest: interested	general interest: doubtful	general interest: not interested	remarks
D.	ny		X					X			X			
	fl							X				X		
	mn											X		
C.	ny					X			X	100,000 sq. ft	X			capable of parhcipating in educational space market in 2 years
ONRY	ny	X		X	X			X	X		X			
CORP.	fl				X					7000 sq. ft of panels	X			
MS	wv				X					24' X 36'	X			
OLS	ny			X				X			X			
	can	X		X		X						X		
	ny	X		X				X			X			
	can				X	X						X		
MS	ny					X								
	ok				X						X			
CORP.	ny					X				200 units		X		
RP.	tx				X						X			
ETING IT	nj						X			10 bays (sls')	X			
RP.	va								X		X			
	va	X		X				X		24' X 30'	X			